What is claimed is:

Sub. B1

~~1. A reagent for preparing a scintigraphic~~ imaging agent for imaging a site within a mammalian body, comprising a specific binding compound that is less than 10,000 daltons in molecular weight covalently linked to a radiolabel complexing moiety having formula:

I.

R^1-CO-(amino acid)^1-(amino acid)^2-Z

wherein (amino acid)^1 and (amino acid)^2 are each independently any primary α- or β-amino acid that does not comprise a thiol group;

Z is a thiol-containing moiety that is cysteine, homocysteine, isocysteine, penicillamine, 2-mercaptoethylamine or 3-mercaptopropylamine;

R^1 is lower (C^1-C^4) alkyl or a covalent linkage to the specific binding compound;

wherein when Z is cysteine, homocysteine, isocysteine or penicillamine, the carbonyl group of said moiety is covalently linked to a hydroxyl group, a NR^3R^4 group, an amino acid or a peptide comprising 2 to 10 amino acids, and wherein R^3 and R^4 are each independently H or lower (C^1-C^4) alkyl; or

II.

Y-(amino acid)^2-(amino acid)^1-NHR^2

wherein Y is a thiol-containing moiety that is cysteine, homocysteine, isocysteine, penicillamine, 2-mercaptoacetate or 3-mercaptopropionate;

(amino acid)^1 and (amino acid)^2 are each independently any primary α- or β-amino acid that does not comprise a thiol group;

R^2 is H or lower (C^1-C^4) alkyl or a covalent linkage to the specific binding compound;

wherein when Y is cysteine, homocysteine, isocysteine or penicillamine, the amino group of said moiety is covalently linked to -H, an amino acid or a peptide comprising 2 to 10 amino acids; and

wherein the radiolabel complexing moiety is covalently linked to the specific binding compound through R^1, R^2, a sidechain group of the sidechain of (amino acid)^1 or (amino acid)^2, or the amino or carboxyl group of cysteine, homocysteine, isocysteine or

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penicillamine.

2. The reagent of Claim 1 wherein the radiolabel complexing moiety is selected fromn the group consisting of moeities having the formula:

-(amino acid)^1-(amino acid)^2-(amino thiol),

and (mercaptocarboxylic acid)-(amino acid)^1-(amino acid)^2-,

wherein (amino acid)^1 and (amino acid)^2 are each independently any primary α- or β-amino acid;

(amino thiol) is selected fromn the group consisting of cysteine, isocysteine, homocysteine, penicilamine, 2-mercaptoethylamine, and 3-mercaptopropylamine; and

(mercaptocarboxylic acid) is selected fromn the group consisting of cysteine, isocysteine, homocysteine, penicilamine, 2-mercaptoacetic acid, and 3-mercaptopropionic acid.

3. The reagent of Claim 2 wherein the radiolabel complexing moiety is selected from the group consisting of moeities having the formula --Gly-Gly-Cys-- or --Cys-Gly-Gly-.

4. A composition of matter comprising the reagent according to Claim 1 selected from the group consisting of:

cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGC.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGCK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGCR.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGCRD.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGCRK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGCRR.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGCKK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGCKKK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGC.Orn.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGCKDK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGC.Orn.D.Orn.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GGC.Orn.D.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.KKC.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.KRC.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.RRC.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.KKCK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GRCK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH$_2$CO.GKCR.amide)

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$CH_2CO.Y_D.Apc.GDCGGC_{Acm}GC_{Acm}GGC$.amide
$CH_2CO.Y_D.Apc.GDCGGC_{Acm}GC_{Acm}GGCG$.amide
$CH_2CO.Y_D.Apc.GDCGGSSGGCG$.amide
$CH_2CO.Y_D.Apc.GDCGGCG$.amide
GRGDGGC
GLFCGC.amide
GRGDGGGGC
$F_DFYW_DKTFTGGC$.amide
acetyl.CGGY.$(CH_2)_4$-piperidine
β-glucan-(=NNHCO.$(CH_2)_2$CO.)GGC.amide

~~5. A reagent according to Claim 1 wherein the specific binding compound is a a specific binding peptide comprising 4 to 100 amino acids.~~

6. The reagent of Claim 1 wherein the specific binding peptide and radiolabel binding moiety are covalently linked through one or more amino acids.

7. A scintigraphic imaging agent comprising the reagent according to Claim 1 wherein the radiolabel binding moiety is bound to a radiolabel.

8. The reagent of Claim 7 wherein the radiolabel is technetium-99m.

9. The reagent of Claim 1 wherein the reagent further comprises a polyvalent linking moiety covalently linked to a multiplicity of specific binding compounds and also covalently linked to a multiplicity of radiolabel complexing moieties to comprise a reagent for preparing a multimeric polyvalent scintigraphic imaging agent, wherein the molecular weight of the multimeric polyvalent scintigraphic imaging agent is less than about 20,000 daltons.

10. The reagent of Claim 9 wherein the polyvalent linking moiety is *bis*-succinimdylmethylether, 4-(2,2-dimethylacetyl)benzoic acid, *tris*(succinimidylethyl) amine, 4-(O-CH_2CO-Gly-Gly-Cys.amide)acetophenone, *bis*-succinimidohexane, *tris*(2-chloroacetamidoethyl)amine, and 1,2-*bis*-[2-(chloroacetamido)ethoxy]ethane or a derivative thereof.

11. A complex formed by reacting the reagent of Claim 1 with technetium-99m in the presence of a reducing agent.

12. The complex of Claim 11, wherein the reducing agent is selected from the group consisting of a dithionite ion, a stannous ion and a ferrous ion.

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13. A complex formed by labeling the reagent of Claim 1 with technetium-99m by ligand exchange of a prereduced technetium-99m complex.

14. A kit for preparing a radiopharmaceutical preparation, said kit comprising a sealed vial containing a predetermined quantity of the reagent of Claim 1 and a sufficient amount of reducing agent to label the reagent with technetium-99m.

15. A method for labeling a reagent according to Claim 1 comprising reacting the reagent with technetium-99m in the presence of a reducing agent.

16. The method of Claim 15, wherein the reducing agent is selected from the group consisting of a dithionite ion, a stannous ion and a ferrous ion.

17. A method for imaging a site within a mammalian body comprising administering an effective diagnostic amount of the reagent of Claim 2 and detecting a radioactive signal from the technetium-99m localized at the site.

18. A composition of matter having formula:

cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGC.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGCK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGCR.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGCRD.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGCRK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGCRR.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGCKK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGCKKK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGC.Orn.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGCKDK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGC.Orn.D.Orn.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GGC.Orn.D.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.KKC.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.KRC.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.RRC.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.KKCK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GRCK.amide)
cyclo(*N*-methyl)FYW$_D$KV.Hcy.(CH_2CO.GKCR.amide)
$CH_2CO.Y_D$.Apc.GDCGGC$_{Acm}$GC$_{Acm}$GGC.amide
$CH_2CO.Y_D$.Apc.GDCGGC$_{Acm}$GC$_{Acm}$GGCG.amide
$CH_2CO.Y_D$.Apc.GDCGGSSGGCG.amide
$CH_2CO.Y_D$.Apc.GDCGGCG.amide
GRGDGGC
GLFCGC.amide

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~~GRGDGGGGC~~
$F_DFYW_DKTFTGGC$.amide
acetyl.CGGY.$(CH_2)_4$-piperidine
or
β-glucan-(=NNHCO.$(CH_2)_3$CO.)GGC.amide

19. The reagent of Claim 1 wherein the specific binding peptide is comprised of linear or cyclic peptides.

20. The reagent of Claim 1 wherein the imaged site within a mammalian body is a thrombus site.

21. The reagent of Claim 1 wherein the imaged site within a mammalian body is a site of an infection.

22. A composition of matter according to Claim 18 that is radiolabeled with technetium-99m.

23. An article of manufacture comprising a sealed vial containing a predetermined quantity of the composition of matter of Claim 18 and a sufficient amount of reducing agent to label the composition with technetium-99m.

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